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EXECUTIVE SUMMARY

An interviewer-administered survey was conducted in Dunsmuir nine months after 19,000 gallons of the herbicide metam sodium spilled into the Sacramento River on July 14, 19991. The survey was designed to more fully document the initial symptoms reported by those exposed to the toxic by-products, mainly methylisothiocyanate, and to determine whether the risk of developing a new health problem or a worsening of prior problem was greater among an exposed group than an unexposed group. An individual was considered exposed if he/she resided in or visited Dunsmuir on July 15 and/or July 16, 1991 for any amount of time. Based upon existing and estimated air levels of MITC, July 15 to 16 represented the period of greatest potential exposure. An individual was considered unexposed if he/she was not in Dunsmuir, Castella, Lakehead, or Mt. Shasta from the time of the spill to 8 pm on July 16, 1991. The survey included 2,065 individuals considered to be exposed and 386 individuals considered to be unexposed. Eighty-one percent of eligible households participated. Nearly 48% of the exposed group reported at least one symptom in the week following the spill, with over one-third of those seeking medial care. The most common symptoms reported were headache and eye irritation. Symptoms were reported by approximately half of each age group under 60 years, with the rate decreasing to 24% among those 70 and older.

Nine health problems were examined with regard to the new onset or a worsening of a prior problem for both the exposed and unexposed groups. The conditions included: arthritis, asthma, bronchitis, chemical sensitivity, chronic fatigue, diarrhea, mood change, skin Rash, and a change in vision. Relative risks were adjusted for age, gender, smoking status, and income. A strong association was found between being in Dunsmuir at the time of the spill and the new onset of diarrhea, chemical sensitivity, mood changes and a change in vision. Due to the airborne route of exposure, respiratory conditions were of concern. Asthma showed a two-fold increase in risk while bronchitis showed a decreased risk, confidence intervals included one. Among those who reported a worsening of a prior condition, only bronchitis showed an elevated risk.

Additional comparisons were made with results from a statewide survey of adults after standardizing for age, gender, and smoking status. A greater number of exposed individuals than expected reported irritated eyes, nausea and wheezing the week following the spill; the number reporting headaches did not differ from the expected. Wheezing, reported by exposed individuals, was the only symptom which was greater then expected the week before the survey. Comparisons by time period (before the spill, at survey) for arthritis, asthma and bronchitis were examined. The observed prevalence of arthritis at the time of the survey in the exposed group was higher than expected. The prevalence of asthma in the exposed group did not differ from the expected for either time period, but there was a slight increase over time. Among the unexposed group, the prevalence of asthma was higher than expected for both time periods. The observed

prevalence of bronchitis was higher in both the exposed and unexposed groups for both time periods.

Due to the limitations of epidemiological studies, we cannot determine whether the reported differences in rates between the exposed and unexposed group were due to exposure to the by-products of metam sodium. Other factors such as stress and social disruption generated by the spill could be mechanisms for the development of health problems. Recall bias and misclassification with regard to exposure or health problems could also have influenced the rates.

A community advisory group recommended that no further health studies be done. DHS is continuing to improve its early health assessment capabilities following emergency releases. DHS will continue to work with other agencies such as county health departments, Department of Fish and Game, and the California Environmental Protection Agency to evaluate new information on metam sodium and its by-products.